

In the Claims:

Underlines indicate insertions, and ~~strikeouts~~ indicate deletions.

1 1. (Previously presented) An apparatus for printing pages of a
2 print job, comprising:
3 a page analyzer operative to identify static page aspects and
4 variable page aspects from page data within a print job;
5 a converting apparatus communicating with the page analyzer and
6 operative to convert the static page aspects into static page layout objects and
7 the variable page aspects into variable print data;
8 an identifying apparatus communicating with the converting
9 apparatus and operative to identify the static page layout objects in the manner
10 allowing for an optimized form to be created, and to allow for appropriate
11 merging with the variable print data;
12 an optimizer apparatus communicating with the identifying
13 apparatus and operative to convert the static page layout objects to an
14 optimized form, wherein optimization level to create the optimized form is based
15 on intended usage of the static page layout objects by a user;
16 a storage apparatus communicating with the optimizer apparatus
17 and operative to store at least one instantiation of the static page layout objects
18 in the optimized form; and
19 a merging apparatus communicating with the storing apparatus and
20 operative to merge the static page layout objects with the variable print data to
21 create merged print data.

1 2. (Original) The system of claim 1 wherein the page analyzer
2 resides within a printer.

1 3. (Original) The apparatus of claim 1 wherein the page
2 analyzer resides within a printer server.

1 4. (Original) The apparatus of claim 1 wherein the optimizer
2 apparatus removes the static page layout objects that are not in an optimized
3 form during the converting activity in order to recover memory.

1 5. (Original) The apparatus of claim 1 wherein the merging
2 apparatus includes a static page buffer and a variable page buffer, the static
3 page buffer capable of receiving raster print data for the optimized form of the
4 static page layout objects, and the variable page buffer operative to receive
5 raster print data for the variable print data.

1 6. (Original) The apparatus of claim 5 wherein the merging
2 apparatus is further operative to convert the optimized form of the static page
3 layout objects stored in the storage apparatus to a raster form, and to convert
4 the variable print data to a raster form, the merging apparatus further operative
5 to initialize the static page buffer with the optimized form of the static page
6 layout objects in the raster form and thereafter to merge the optimized form of
7 the static page layout objects with the variable print data by transmitting the
8 variable print data in the raster form to the variable page buffer.

1 7. (Original) The apparatus of claim 1 wherein the static page
2 aspects comprise static image elements.

1 8. (Original) The apparatus of claim 1 wherein the static page
2 layout objects comprise forms.

1 9. (Original) The apparatus of claim 8 wherein a processed
2 form comprises at least one layer.

1 10. (Previously presented) A page printing apparatus,
2 comprising:
3 a page analyzer operative to identify at least one static page aspect
4 and at least one variable page aspect within a print job;

5 a converting apparatus communicating with the page analyzer and
6 operative to convert the static page aspect into a static layer and the variable
7 page aspect into a variable layer;

8 an identifying apparatus communicating with the converting
9 apparatus and operative to identify the static layer in the manner allowing for an
10 optimized form to be created, and to allow for appropriate merging with the
11 variable layer;

12 an optimizer apparatus communicating with the identifying
13 apparatus and operative to convert the static layer to an optimized form,
14 wherein optimization level to create the optimized form is based on intended
15 usage of the static page layout objects by a user;

16 a storage apparatus communicating with the optimizer apparatus
17 and operative to store at least one instantiation of the static layer in the
18 optimized form; and

19 a merging apparatus communicating with the storing apparatus and
20 operative to merge the static layer with the variable layer to create merged print
21 data.

1 11. (Original) The page printing apparatus of claim 10 wherein
2 the static layer is formed from static page layout objects.

1 12. (Original) The page printing apparatus of claim 10 wherein
2 the variable layer is formed from variable print data.

1 13. (Original) The page printing apparatus of claim 10 where
2 each of the static layer and the variable layer comprise a process collection of
3 page layout objects including one or more of images, graphics, and text
4 represented in a page description language.

1 14. (Original) The page printing apparatus of claim 10 wherein
2 the storage apparatus is configured to store the static layer for re-use by caching
3 the static layer within the storage apparatus.

1 15. (Previously presented) A method for printing pages of a
2 print job, comprising:

3 analyzing pages of a print job for static page aspects and variable
4 page aspects;

5 creating print data by converting at least one instantiation of the
6 static page aspects into static page layout objects, and converting the variable
7 page aspects into variable print data;

8 identifying the static page layout objects in a manner allowing for
9 an optimized form to be created, and to allow for appropriate merging with the
10 variable print data;

11 converting the static page layout objects to an optimized form,
12 wherein optimization level to create the optimized form is based on intended
13 usage of the static page layout objects by a user;

14 storing at least one instantiation of the static page layout objects in
15 the optimized form;

16 merging the static page layout objects with the variable print data
17 to create appropriately merged print data; and

18 printing the merged print data.

1 16. (Original) The method of claim 15 wherein the step of
2 merging comprises:

3 converting the static page layout objects to a raster form;

4 converting the variable print data to a raster form;

5 initializing a buffer device with the raster form of the static page
6 layout objects; and

7 transmitting the raster form of the static page layout objects to the
8 buffer device.

1 17. (Original) The method of claim 15 further including
2 removing the static page layout objects present in non-optimized form, following
3 converting the at least one instantiation of the static page aspects into the static
4 page layout objects.

1 18. (Original) The method of claim 15 wherein the static page
2 layout objects form a static layer, and wherein the variable print data forms a
3 variable layer.

1 19. (Original) The method of claim 18 wherein the step of
2 storing at least one instantiation of the static page layout objects comprises
3 layer caching the static layer within memory for later re-use.

1 20. (Original) The method of claim 15 wherein a plurality of the
2 static page layout objects together provide a form that includes one or more of
3 images, graphics and text represented in a page description language.

1 21. (Previously presented) An apparatus for printing pages of a
2 print job, comprising:

3 a page analyzer operative to identify static page aspects and
4 variable page aspects from page data within a print job;
5 a converting apparatus communicating with the page analyzer and
6 operative to convert the static page aspects into static page layout objects and
7 the variable page aspects into variable print data;

8 an identifying apparatus communicating with the converting
9 apparatus and operative to identify the static page layout objects in the manner
10 allowing for an optimized form to be created, and to allow for appropriate
11 merging with the variable print data;

12 an optimizer apparatus communicating with the identifying
13 apparatus and operative to convert the static page layout objects to an
14 optimized form, wherein optimization level to create the optimized form is based
15 on intended use of the static page layout objects by a user, and wherein
16 individual ones of the static page layout objects include a field indicative of the
17 intended use by the user, the field being used to determine the optimization level
18 and to optimize storage of the static page layout objects;

19 a storage apparatus communicating with the optimizer apparatus
20 and operative to store at least one instantiation of the static page layout objects
21 in the optimized form; and

22 a merging apparatus communicating with the storing apparatus and
23 operative to merge the static page layout objects with the variable print data to
24 create merged print data.

1 22. (Previously presented) The apparatus of claim 9 wherein the
2 preprocessed form comprises one or more layers, and management of the one or
3 more layers is performed by calling a file system of a printer in order to manage
4 resources of the printer.

1 23. (Previously presented) The apparatus of claim 22 wherein
2 caching of the one or more layers is performed by establishing a link between
3 individual ones of the layers and the static page layout objects.

1 24. (Previously presented) The apparatus of claim 23 wherein
2 individual static page layout objects include a field indicative of intended usage
3 of the individual static page layout objects by a user.

1 25. (Previously presented) The apparatus of claim 24 wherein
2 the field is used by a printer to optimize storage of the static page layout
3 objects.

1 26. (Previously presented) The apparatus of claim 1 wherein the
2 optimized form is preprocessed to create one or more layers, wherein individual
3 ones of the layers are used to create a page configured for printing by a printer.

1 27. (Previously presented) The apparatus of claim 26 wherein
2 the individual ones of the layers are independent of each other and are managed
3 by the printer.

1 28. (Previously presented) The apparatus of claim 26 wherein
2 upon deletion of the optimized form, a correspondingly created cached layer is
3 also deleted.

1 29. (Previously presented) The apparatus of claim 26 wherein
2 upon renaming of the optimized form, links to individual ones of the layers
3 related to the optimized form are updated.
